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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/398,006 09/16/99 OKAMOTO

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IM22/1102

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EXAMINER

FISCHER, J

ART UNIT

PAPER NUMBER

1733

DATE MAILED: 11/02/01

10

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/398,006

Applicant(s)

OKAMOTO ET AL.

Examiner

Justin R Fischer

Art Unit

1733

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 August 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1 and 3-5 rejected under 35 U.S.C. 103(a) as being unpatentable over Barassi et al. (US 3,656,533) and Admitted prior art (page 4, middle paragraph).
Barassi et al. teach the manufacture of radial, pneumatic tires having a general tire construction, including a pair of bead cores, a pair of sidewall portions, a carcass composed of at least one rubberized cord ply extending between said pair of bead cores, and a belt reinforcing structure. In describing the belt reinforcing structure, Barassi et al. include the following components: an innermost cord layer (6) of metallic cords disposed at an angle between 13° and 33°, a middle cord layer (5) of textile cords disposed at an angle between 10° and 30°, and an outermost cord layer (7) of metallic cords disposed at angle between 60° and 90° (Column 1, Lines 41-63). However, the reference is silent with respect to the tread pattern, and thus necessarily fails to establish a relationship between the axial extent of the circumferential grooves and the axial extent of the outermost cord layer. In any event, the inclusion of circumferential grooves in the tread portion is extremely well known and conventional in the tire industry, as applicant has described in a "conventional tire" on page 4 of the specification. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention

to define a tread portion with conventional circumferential grooves in accordance to the limitations of the claimed invention in the general tire construction outlined by Barassi et al., as set forth below.

As previously mentioned, Barassi et al. describe a tire design including the general tire features and additionally incorporate a belt structure in accordance to the limitations of the claimed invention (with respect to cord angles). Though not depicted by the reference, it is extremely conventional and well known to include circumferential grooves in a tread portion to improve wet performance. Regarding the axial extent of the outermost cord layer in Barassi et al., the reference suggests a width that extends over the entire ground contacting portion and the entire portion of connection of the tread and the sidewalls, as depicted in Figure 1 and described in Column 2, Lines 60-65. Thus, in view of Barassi et al., it appears evident that upon providing a series of conventional, circumferential grooves, the end portions of the outermost cord layer would extend beyond the axial extent of the circumferential grooves.

Regarding claims 3 and 4, Barassi et al. suggest that the outermost cord layer has a width that is between 1.05 and 1.20 times the width of the widest underlying cord layer (Figure 1 suggests that the underlying cord layers have approximately the same width). Thus, this teaching satisfies the requirements that the outermost cord layer covers both widthwise ends of the middle cord layer and that the width of the outermost cord layer is between 1.0 and 1.2 times the width of the middle cord layer.

With respect to claim 5, though Barassi et al. do not address the rubber gauge at the end portions of any of the respective cord layers, the claim only requires that the

gauge between the middle and outermost cord layer is more than 0.15 times the gauge between the innermost and middle layer. Thus, this broad range includes a plurality of possible quantitative relationships, including a design in which the gauges between respective cord layers are equivalent. As such, Barassi et al. do not provide any teaching suggesting an extremely small gauge between the middle and outermost cord layers (with respect to the gauge between the innermost and middle cord layers). Therefore, it is the examiner's position that one of ordinary skill in the art at the time of the invention would have readily appreciated and expected the gauges to fall within the broad ranges defined by the claimed invention.

It should be lastly noted that in describing the "cross cord layer", applicant has stated that the cords of an innermost layer and the cords of a middle layer are arranged so as to cross with each other with respect to a plane parallel to the equatorial plane of the tire. Furthermore, applicant has suggested that the inclination angles in the innermost cord layer and the middle cord layer are **approximately** equal to each other (Page 19). Thus, there is no requirement that the cords of each layer are composed of the same material or that they are crossed at exactly the same angle. Therefore, though Barassi et al. suggest different materials for the innermost and middle cord layer and an inclination angle in the middle cord layer greater by 2° (with respect to the innermost cord layer), it is the examiner's position that the reference meets all the limitations of the claimed invention.

3. Claim 2 rejected under 35 U.S.C. 103(a) as being unpatentable over Barassi et al. as applied to claim 1 above, and further in view of Kohno et al. (US 5,968,295). As previously mentioned, Barassi et al. teach all the limitations of the independent claim.

The reference, however, is silent with respect to the modulus of the coating rubber in the outermost cord layer (claim requires a modulus of at least **200 kgf/cm²**). Kohno et al., on the other hand, describe a similar radial, pneumatic tire having a multi-layered belt structure in which a coating rubber for the outermost cord layer is suggested to be greater than **200 kgf/mm²**, which falls within the large range outlined by applicant (Column 2, Lines 46-48). Thus, in view of Kohno and the broad range suggested by applicant, it would have been obvious to one of ordinary skill in the art at the time of the invention to select an outermost coating rubber having the broad properties defined by the claimed invention to provide adequate protection in the crown portion of the tire.

4. Claim 6 rejected under 35 U.S.C. 103(a) as being unpatentable over Barassi et al. as applied to claim 1 above, and further in view of Okamoto (US 5,779,828). As previously mentioned, Barassi et al. teach all the limitations of the independent claim. The reference, however, is silent with respect to the employment of an end cover rubber having a wavy surface in accordance to the limitations of the claimed invention (peak to trough distance of between 0.05 and 0.25 millimeters). In any event, a variety of end cover rubbers are conventionally used in the ends of breaker or belt layers to prevent "end separation". Furthermore, Okamoto describes a specific type of end cover rubber in the belt region having a wavy surface and a peak to trough distance of between 0.05 and 0.25 millimeters, which mimics the range outlined by the claimed invention (Column 8, Lines 53-61). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention employ the specified wavy end cover, as suggested by Okamoto, in the general tire construction described by Barassi et al. The use of such a

wavy end cover rubber provides reinforcement in both the radial direction and the axial direction, further reducing the occurrence of "end separation".

5. Claim 7 rejected under 35 U.S.C. 103(a) as being unpatentable over Barassi et al. as applied to claim 1 above, and further in view of Imamura et al. (US 3,913,652).

As previously mentioned, Barassi et al. teach all the limitations of the independent claim; however, the reference is silent with respect to the use of an end cover rubber that is joined to a widthwise outer end face of the cord layer over a full periphery of the cord layer, as depicted in Figure 11. In any event, as stated in paragraph 4, a variety of end cover rubbers are conventionally used in the ends of breaker or belt layers to prevent "end separation". Furthermore, Imamura et al. depict multiple arrangements of conventional end cover rubbers, including an embodiment in which the end cover rubber is joined to a widthwise outer end face of the cord layer over a full periphery of the cord layer (Figure 1C). In describing the width of the end cover rubber or rubber reinforcing layer, Imamura et al. provide multiple embodiments (Examples 4 and 5) in which the gauge of the end cover rubber is approximately 1 millimeter, which is within the large range of 0.05-5.0 millimeters defined by the claimed invention. As such, it would have been obvious to one of ordinary skill in the art at the time of the invention to employ an end cover rubber in accordance to the limitations of the claimed invention, as suggested by Imamura et al., in the general tire construction defined by Barassi et al.. This particular type of end cover rubber represents one of many conventional such rubbers used to prevent "end separation" and would have been readily appreciated by one of ordinary skill in the art.

Response to Arguments

6. Applicant's arguments with respect to claims 1-7 have been considered but are moot in view of the new ground(s) of rejection. In responding to the office action of March 20, 2001, applicant has provided two arguments. First, the circumferential grooves depicted by Kohno are nothing more than representative and ultimately do not suggest any relationship between the width of the outermost cord layer and the axial extent of the circumferential grooves. Thus, Kohno can only be viewed as teaching a three cord layer belt construction with inclination angles in accordance to the limitations of the claimed invention and a tread pattern, which may have circumferential grooves. Second, applicant contends that Suzuki, which is directed toward a motorcycle tire, would not normally be relied upon to provide structure or technology in tires for four-wheel vehicles.

Regarding the use of Kohno, the examiner has removed this reference from the rejection since it is not available as prior art due to an ineffective priority date (inventive entities are the same in Kohno and current application). Regarding the use of Suzuki, as stated by applicant, it is the examiner's position that two-wheel (motorcycle) and four-wheel tires each have a unique and separate design that is only interchangeable when a specific suggestion has been provided. As such, Suzuki has been removed from the rejection outlined above.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Justin R Fischer whose telephone number is (703) 605-4397. The examiner can normally be reached on M-F (7:30-4:00).

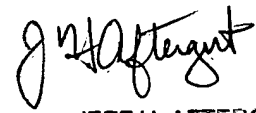
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Ball can be reached on (703) 308-2058. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-7718 for regular communications and (703) 305-3599 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.


Justin Fischer

October 31, 2001


JEFF H. AFTERGUT
PRIMARY EXAMINER
GROUP 1300